REMARKS

Claims 1-5 are pending in this application. By this Amendment, the drawings, Specification and claims 1, 4 and 5 are amended. Claim 3 is canceled. No new matter is added. Reconsideration in view of the above amendments in the following remarks as respectfully requested.

The Office Action objects to Figs. 13 and 14 due to minor informalities. By this amendment, Figs. 13 and 14 are amended to obviate the objection. Accordingly, withdrawal of the objection is respectfully requested.

The Office Action objects to the Specification due to minor informalities. In particular, the Office Action suggests that the terms "distribution circuit" and "synthetic circuit" should be accompanied by or changed to "divider circuit" and "combiner circuit" respectively. By this Amendment, the suggested terms are added to the Specification according to the Examiner's instructions. Accordingly, withdrawal of the objection is respectfully requested.

The Office Action rejects claim 4 under 35 USC §112, second paragraph. By this Amendment, claim 4 is amended to obviate the rejection. Accordingly, withdrawal of the rejection of claim 4 is respectfully requested.

Claims 1-2 and 5 Define Patentable Subject Matter

The Office Action rejects claims 1 under 35 USC §102(b) over Carter et al. (U.S. Patent No. 4,028,632); rejects claims 1, 3 and 5 under 35 USC §102(b) over Ito et al. (U.S. Patent No. 4,309,666); and rejects claim 2 under 35 USC §103(a) over Ito in view of the Applicant's admitted prior art (AAPA). These rejections are respectfully traversed regarding claims 1-2 and 5, and moot regarding canceled claim 3.

In particular, Applicant asserts that the AAPA, Carter and Ito, individually or in combination, do not teach or suggest a high frequency circuit device having a distribution circuit for distributing a signal to a plurality of first lines, a synthetic circuit for combining signals inputted from a plurality of second lines, transistors respectively placed between an end of each individual first line and an end of each individual second line, isolators respectively connected between the transistors and the signal input terminal and between the transistors and the signal output terminal, and wherein at least one of said isolators is coupled to an impedance converter circuit, as recited in independent claims 1 and 5. Similarly regarding the 35 USC §103(a) rejection, Applicant asserts that it would not have been obvious at the time of the invention to modify Ito using the teachings of the AAPA to teach or suggest an isolator is coupled to an impedance converter circuit.

The AAPA discloses a high output amplifier that includes a number of transistors **104**, along with various microstrip lines / impedance converter circuits **106** and signal terminals **108** and **110.** See Figs. 13 and 14 and page 1, lines 11-26. The AAPA does not teach or suggest a high frequency device having at least one isolator coupled to a impedance converter circuit, nor does the Office Action assert such.

To the contrary, while Figs. 13 and 14 show a high frequency circuit having a variety of impedance converter circuits **106**, none of the impedance converter circuits **106** is coupled to an isolator. Thus, the AAPA does not teach or suggest each and every limitation of independent claims 1 and 5.

Carter discloses a microwave power divider that includes a driver **16**, a power divider **32** that divides an inputted signal to a number of amplifiers **30** and a power combiner **36** that receives amplified signals from the amplifiers **30**, combines the amplified signals and outputs the

combined signal to a signal output terminal. See, Abstract and col. 3, line 43 to col. 4, line 22. As shown in Fig. 3 of Carter, the power divider **32** includes a circulator **38** and isomismatch units **40-46** that can subdivide the received signal into predetermined fractional parts. See, column 4, lines 4-8. Similarly, the power combiner **36** includes a second circulator **80** coupled to a number of isoreflectors **82-88**, which are devices similar to the isomismatch units **40-46**. Carter does not teach or suggest a high frequency circuit having at least one isolator coupled to an impedance converter circuit.

To the contrary, the Carter device does not include any impedance converter circuitry whatsoever. Accordingly, Carter cannot teach or suggest an isolator coupled to an impedance converter circuit. Thus, Carter does not provide for the deficiencies of the AAPA.

Ito discloses a semiconductor amplifier that includes the first circuit coupler **28** that divides and distributes the input signal to two circulators **24** and **26**. The signals out of the circulators **24** and **26** are then fed to amplifiers **30** and **32**, and the amplified signals are fed to a second pair of circulators **24** and **26**. See Figs. 1 and 3, and col. 2, line 49 through col. 3, line 30. Ito does not disclose using an impedance conversion circuit of any kind as is admitted by the Office Action on page 4, section 9. Accordingly, Ito does not teach, suggest or even appreciate an impedance conversion circuit coupled to an isolator. Thus, Ito does not provide for the deficiencies of AAPA and Carter.

Therefore, the invention as recited in independent claims 1 and 5 is not anticipated by the applied art of record.

Further, regarding the rejection under 35 U.S.C. §103(a), the Office Action has not established a *prima facie* case of obviousness. To establish a *prima facie* case of obviousness, the prior art references must teach or suggest all the claim limitations, and there must be some

motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the reference teachings. See MPEP §2143, for example. As discussed above, the AAPA, Carter and Ito, individually or in combination, do not teach or suggest an isolator is coupled to an impedance converter circuit, as recited in independent claims 1 and 5.

Furthermore, one of ordinary skill in the art would not have been motivated to modify Carter or Ito to include an impedance conversion circuit. While the Office Action asserts that "it would have been obvious to one of ordinary skill in the art at the time of the invention to have substituted the **art recognized equivalent means** of impedance matching disclosed in the AAPA Figures 13 and 14 in place of the impedance matching means in the device of Ito, et al., because such modifications would have been considered a mere substitution of art recognized equivalent impedance matching means" {bolded emphasis added}, Applicant respectfully submits that the impedance adjustment devices of Ito are not equivalent devices to impedance conversion circuits.

Ito's impedance matching means adds a particular fixed impedance to a circuit regardless of any input or output impedance associated with the impedance matching means. For example, the impedance matching means of Ito will always add a fixed, predetermined capacitance and resistance to an amplifier output regardless of the amplifier's output characteristics.

In comparison, the impedance conversion circuits of the present invention provide no fixed added impedance, but will change the impedance of a device, such as an amplifier output, as a function the device's impedance. That is, as the impedance adjustment technique of Ito and the present invention act on completely different principles, one device cannot necessarily be substituted for another -- they are not equivalent devices.

Thus, independent claims 1 and 5 are directed to patentable subject matter. Claim 2 is are directed to patentable subject matter by virtue of its dependence on independent claim 1 as well as for the additional features it provides. Accordingly, withdrawal of the rejections of claims 1-2 and 5 under 35 USC § 102(b) and 103(a) is respectfully requested.

Claim 4 Defines Patentable Subject Matter

Regarding claim 4, the Office Action rejects claim 4 under 35 USC §102(b) over Carter. This rejection is respectfully traversed.

In particular, Applicant asserts that Carter does not teach or suggest a high-frequency circuit device that includes a distribution circuit, a synthetic circuit, a number of transistors placed between the distribution circuit and the synthetic circuit, wherein first and second isolators having respectively an input port, an output port, and a third port connected to a terminal resistor are provided at a branch portion of the distribution circuit and a combined portion of the synthetic circuit, as recited in independent claim 4.

Carter discloses the microwave power divider as disclosed above. Carter does not disclose isolators having an input port, an output port, and a third port connected to a terminal resistor.

To the contrary, the circulators **38, 80** of Figs. 3 and 6 of Carter do not perform any equivalent isolation function, but operate on a completely different (non-isolation) principle. For example, the circulator **38** of Fig. 3 is configured such that each isomismatch units **40-46** is designed to transmit a portion of power while reflecting another portion. See, col. 4, lines 1-22. For instance, isomismatch unit **42** is designed to transmit 1/3 of any power received from the circulator **38** while reflecting back to the circulator 2/3 of the received power. See, col. 4, lines

15-18. Furthermore, any incidental energy reflected from isomismatch unit **46** will be fed back directly to the input port **1**. Similarly, any energy received from a respective amplifier **24** but imperfectly absorbed by isomismatch unit **46** will also be fed back directly to the input port **1**.

Even assuming the circulators **38, 80** of Figs. 3 and 6 were to perform any equivalent isolation function, the circulators **38, 80** are connected no resistors as Carter discloses that its circulators **38, 80** are connected to an input (or output) port and a number of isomismatch units **40-46**, which are non-equivalent stripline/reflective devices. Accordingly, Carter does not teach or suggest each and every limitation of the claimed invention.

Thus, independent claim 4 is directed to patentable subject matter. Accordingly, withdrawal of the rejection of claim 4 under 35 USC §102(b) is respectfully requested.

Conclusion

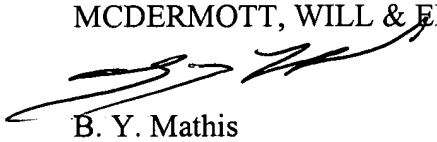
For the reasons given, Applicant believes that this application is in condition for allowance and Applicant requests that the Examiner give this application fair consideration and permit it to issue as a patent. However, if the Examiner believes that the application can be put in even better condition for allowance, the Examiner is invited to contact Applicant's representatives listed below.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including

extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please amend the paragraphs on page 6, line 26 to page 7, line 22, to read as follows:

In Fig. 1, reference numeral 10 indicates the high output amplifier. The high output amplifier 10 constitutes an MMIC chip. Reference numeral 12 indicates a semiconductor substrate, which is comprised, for example, GaAs, InP, Si or the like. A chip size is a square of from 1mm to several tens of mm, and the thickness of the semiconductor substrate ranges form 30μm to 150μm. A ground conductor (not shown) such as Au is formed on the back or reverse side of the semiconductor substrate 12. Reference numerals 14 indicate transistors placed on the semiconductor substrate 12. In the present embodiment, FETs are used as the transistors. Reference numeral 16 indicates a distribution circuit, i.e., a divider circuit, placed on the semiconductor substrate 12. Reference numeral 16a indicates a branch portion of the distribution circuit 16. Reference numerals 16b indicate a plurality of first lines which branch off from the branch portion 16a of the distribution circuit 16. In the present embodiment, the two branch off from the branch portion 16a. Reference numerals 16c indicate impedance converter circuits which constitute the first lines 16b respectively. They are, for example, low-impedance microstrip lines, i.e., microstrip lines each having a $\lambda/4$ electrical length.

Reference numeral 18 indicates a composite or synthetic circuit, i.e., a combiner circuit, placed in the semiconductor substrate 12. Reference numeral 18a indicates a confluent or combined portion of the synthetic circuit 18. Reference numerals 18b indicate second lines constituting branch lines, which join the combined portion 18a of the synthetic circuit 18. Reference numerals 18c indicate impedance converter circuits which constitute the second lines

18b respectively. They are, for example, low-impedance microstrip lines, i.e., microstrip lines each having a $\lambda/4$ electrical length.

IN THE CLAIMS:

Claim 3 has been cancelled.

Claims 1, 4 and 5 have been amended as follows:

1. (Amended) A high-frequency circuit device comprising:

a distribution circuit for distributing a signal inputted from a signal input terminal to a plurality of first lines through a branch portion;

a synthetic circuit for combining signals inputted from a plurality of second lines into one through a combined portion as an output signal and outputting the same from a signal output terminal;

transistors respectively placed between [one ends] an end of each individual first [lines] line of said distribution circuit and [one ends] an end of each individual second [lines] line of said synthetic circuit; and

isolators having respectively an input port, an output port, and a third port connected to a terminal resistor, respectively connected between said transistors and signal input terminal and between said transistors and the signal output terminal;

wherein at least one of said isolators is coupled to an impedance converter circuit.

4. (Amended) [The high-frequency device according to claim 1] A high-frequency circuit device comprising:

a distribution circuit for distributing a signal inputted from a signal input terminal to a plurality of first lines through a branch portion;

a synthetic circuit for combining signals inputted from a plurality of second lines into one through a combined portion as an output signal and outputting the same from a signal output terminal; and

transistors respectively placed between an end of each individual first line of said distribution circuit and an end of each individual second line of said synthetic circuit;

wherein [said] first and second isolators having respectively an input port, an output port, and a third port connected to a terminal resistor are provided at the branch portion of said distribution circuit and the combined portion of said synthetic circuit respectively, said first isolators placed at the branch portion [are] being respectively connected to the first lines different from one another with both line ends of their output ports as signal line ends, and [said] said second isolators placed at the combined portion [are] being respectively connected to the second lines different from one another with both line ends of their input ports as signal line ends.

5. (Amended) A high-frequency circuit device comprising:

a distribution circuit for distributing a signal inputted from a signal input terminal to a plurality of first lines respectively having a plurality of first impedance converter circuits through a branch portion;

a synthetic circuit for combining signals inputted from a plurality of second lines each having a second impedance converter circuit into through a combined portion as an output signal and outputting the same from a signal output terminal;

transistors respectively placed between one ends of each individual first lines of said distribution circuit and one ends of each individual second lines of said synthetic circuit; and

isolators connected either between said transistors and the branch portion of said distribution circuit or between said transistors and the combined portion of said synthetic circuit;

wherein at least one of said isolators is coupled to an impedance converter circuit.

Please add new claim 6 as follows:

-- 6. (New) The high-frequency circuit device according to claim 4, wherein at least one of said isolators is coupled to an impedance converter circuit.--